



STEVAL-TDR022V1

RF power amplifier using the PD85025-E
for UHF OFDM and 2-way mobile radios

Features

- Excellent thermal stability
- Frequency: 340 - 520 MHz
- Supply voltage: 15 V
- Output power: 10 WPEP
- Gain: 16.5 dB min.
- IMD3 < -27 dBc at 10 WPEP
- Load mismatch: 20:1
- BeO free amplifier

Description

The STEVAL-TDR022V1 is an demonstration board using PD85025-E LDMOS transistor and designed for UHF OFDM and 2-way mobile radios.

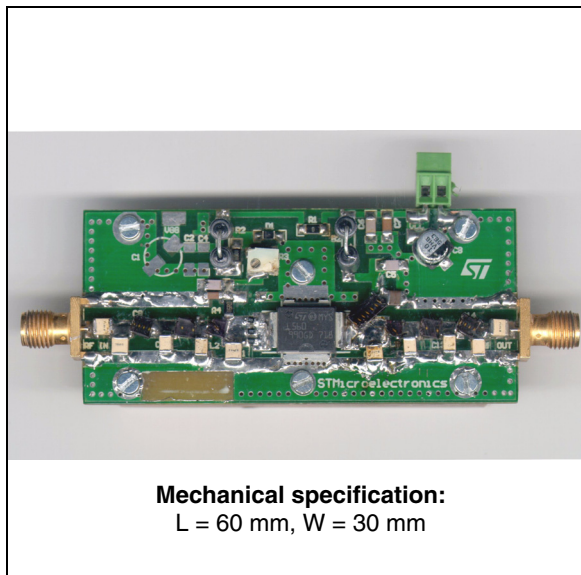


Table 1. Device summary

Order code
STEVAL-TDR022V1

Contents

1 **Electrical characteristics** 3

2 **Test circuit** 4

3 **Circuit layout** 5

4 **Revision history** 7



1 Electrical characteristics

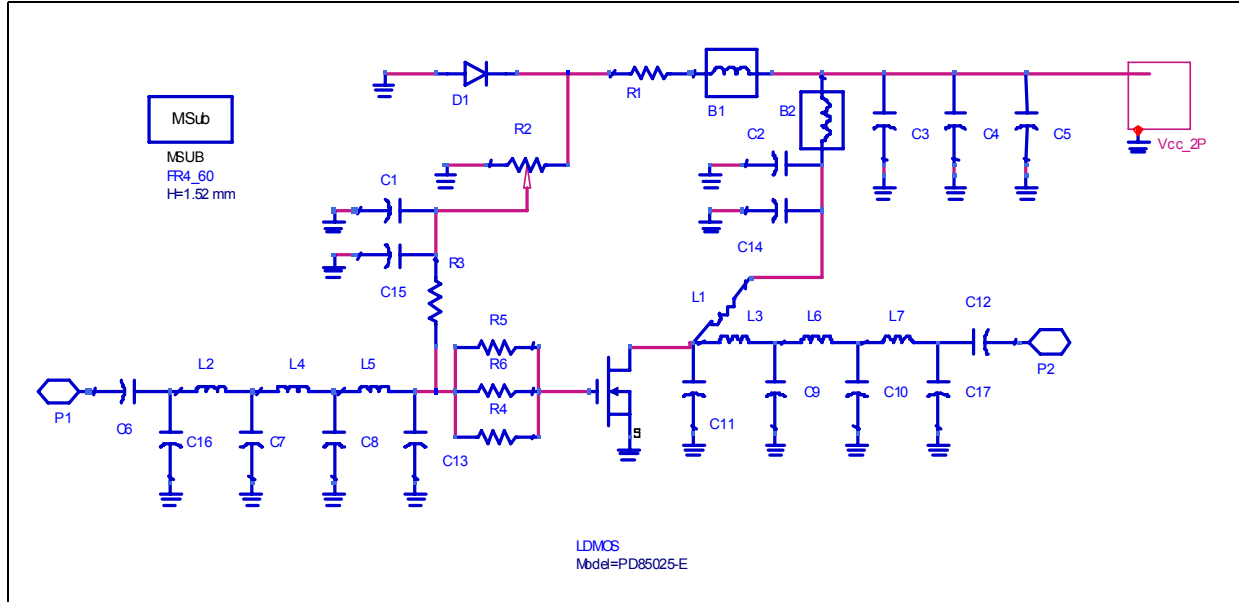
$T_A = +25\text{ }^{\circ}\text{C}$, $V_{DD} = 15\text{ V}$, $I_{dq} = 220\text{ mA}$

Table 2. Electrical specification

Symbol	Test conditions	Min.	Typ.	Max.	Unit
Freq	Frequency range	340		520	MHz
P _{OUT}	2 Tones test - DF = 600 kHz		10		WPEP
Gain	@ P _{OUT} = 10 WPEP	16.5			dB
I _D	Drain current @ 10W PEP			1.25	A
H2	2 nd harmonic @ P _{OUT} = 10 WPEP		-37 / -60		dB
H3	3 rd harmonic @ P _{OUT} = 10 WPEP		-60 / -68		dB
VSWR	Load mismatch all phases @ P _{OUT} = 10 W		20:1		

2 Test circuit

Figure 1. Test circuit schematic



3 Circuit layout

Figure 2. Circuit layout

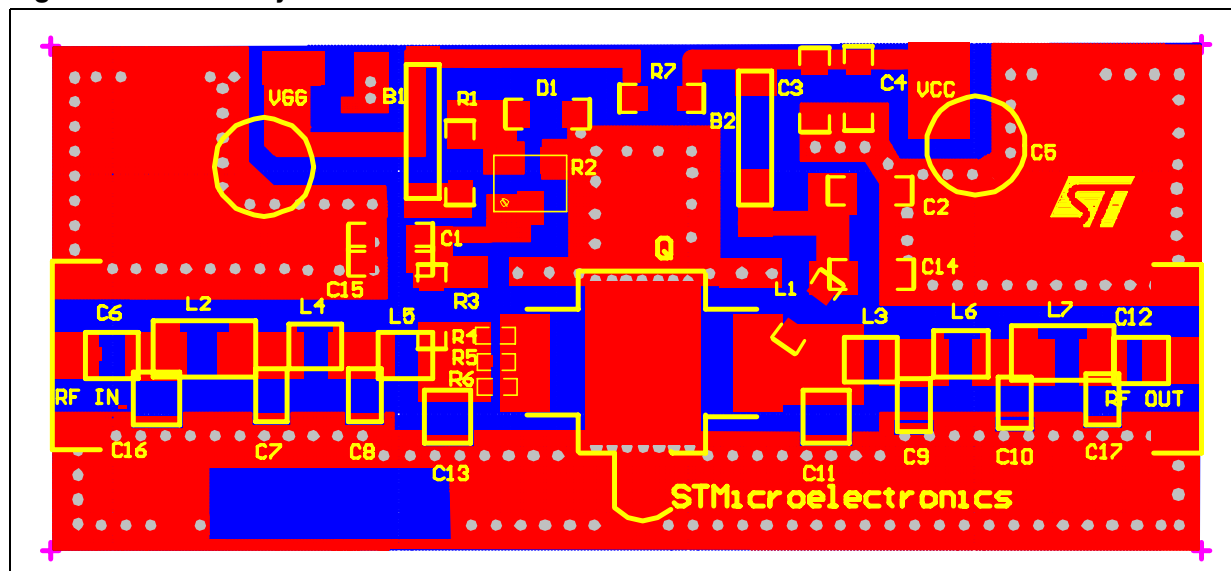


Table 3. Component part list

Component ID	Description	Value	Case size	Manufacturer	Part code
B1	Ferrite bead			Panasonic	EXCELDRC35C
B2	Ferrite bead			Panasonic	EXCELDRC35C
C1, C2	Capacitor	120 pF	1206	Murata	GRM42-6 COG 121J 50_
C3	Capacitor	1 nF	1206	Murata	GRM42-6 COG 102J 50
C4	Capacitor	100 nF	1206	Murata	GRM42-6_X7R 104K 50_
C5	Capacitor	10 µF	SMT	Panasonic	EEVHB1V100P
C6, C12	Capacitor	180 pF	100B	ATC	ATC 100B 181JW
C7	Capacitor	22 pF	100B	ATC	ATC 100B 220JW
C8	Capacitor	47 pF	100B	ATC	ATC 100B 470JW
C9	Capacitor	36 pF	100B	ATC	ATC 100B 360JW
C10	Capacitor	22 pF	100B	ATC	ATC 100B 220JW
C11	Capacitor	47 pF	100B	ATC	ATC 100B 470 JW
C16	Capacitor	6.8 pF	100B	ATC	ATC 100B 6R8BW
C13	Capacitor	51 pF	100B	ATC	ATC 100B 510JW
C14	Capacitor	10 µF		Murata	GRM32NF51E106ZA01B
C15	Capacitor	330 nF	1206	Murata	GRM42-6_X7R 334K 50_
C17	Capacitor	9.1 pF	100B	ATC	ATC 100B 9R1JW
D1	Zener diode	5.1 V	SOD110	Philips	BZX284C5V1
L1	Inductor	22 nH		Coilcraft	B07TJLB

Table 3. Component part list (continued)

Component ID	Description	Value	Case size	Manufacturer	Part code
L2, L7	Inductor	12.5 nH		Coilcraft	A04TJLB
L3, L5	Inductor	2,5 nH		Coilcraft	A01TKLB
L4, L6	Inductor	5 nH		Coilcraft	A02TJLB
R1	Resistor	1 k Ω	1206	Tyco Electronics	01623440-1
R2	Potentiometer	10 k Ω		Bourns Electronics	3214W-1-103E
R3	Resistor	16 Ω	1206	Bourns Electronics	
R7	Resistor	0 Ω	1206	Bourns Electronics	
R4, R5, R6	Resistor	2.2 Ω	603	VISHAY	D11/CRCW0603
Vcc_2P	Connector DC	2 poli	2.54mm	Phoenix Contact	1725656
P1_P2	RF Connector	SMA_Female	Flange solder		1.54 mm
Q	LDMOS	PD85025-E		STMicroelectronics	PD85025-E
Board	FR-4 THk=0.060" 2OZ Cu both sides				

4 Revision history

Table 4. Document revision history

Date	Revision	Changes
11-Oct-2010	1	Initial release

Please Read Carefully:

Information in this document is provided solely in connection with ST products. STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, modifications or improvements, to this document, and the products and services described herein at any time, without notice.

All ST products are sold pursuant to ST's terms and conditions of sale.

Purchasers are solely responsible for the choice, selection and use of the ST products and services described herein, and ST assumes no liability whatsoever relating to the choice, selection or use of the ST products and services described herein.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted under this document. If any part of this document refers to any third party products or services it shall not be deemed a license grant by ST for the use of such third party products or services, or any intellectual property contained therein or considered as a warranty covering the use in any manner whatsoever of such third party products or services or any intellectual property contained therein.

UNLESS OTHERWISE SET FORTH IN ST'S TERMS AND CONDITIONS OF SALE ST DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY WITH RESPECT TO THE USE AND/OR SALE OF ST PRODUCTS INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION), OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT.

UNLESS EXPRESSLY APPROVED IN WRITING BY AN AUTHORIZED ST REPRESENTATIVE, ST PRODUCTS ARE NOT RECOMMENDED, AUTHORIZED OR WARRANTED FOR USE IN MILITARY, AIR CRAFT, SPACE, LIFE SAVING, OR LIFE SUSTAINING APPLICATIONS, NOR IN PRODUCTS OR SYSTEMS WHERE FAILURE OR MALFUNCTION MAY RESULT IN PERSONAL INJURY, DEATH, OR SEVERE PROPERTY OR ENVIRONMENTAL DAMAGE. ST PRODUCTS WHICH ARE NOT SPECIFIED AS "AUTOMOTIVE GRADE" MAY ONLY BE USED IN AUTOMOTIVE APPLICATIONS AT USER'S OWN RISK.

Resale of ST products with provisions different from the statements and/or technical features set forth in this document shall immediately void any warranty granted by ST for the ST product or service described herein and shall not create or extend in any manner whatsoever, any liability of ST.

ST and the ST logo are trademarks or registered trademarks of ST in various countries.

Information in this document supersedes and replaces all information previously supplied.

The ST logo is a registered trademark of STMicroelectronics. All other names are the property of their respective owners.

© 2010 STMicroelectronics - All rights reserved

STMicroelectronics group of companies

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Philippines - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States of America

www.st.com